

The Middle 3 Rouge River Subwatershed Advisory Group established long-term goals for its watershed management plan. Long-term goals were identified to establish a framework to guide long-term efforts to protect the existing values of the river and restore the impaired uses. Under each goal, short-term objectives were developed to identify the conditions or activities that were expected to be completed within five years, as interim steps in achieving the long-term goals. The long-term goals are listed below, along with highlighted successes. The complete list of short-term objectives can be found at www.rougeriver.com.

Rouge River Watershed Measuring Our Success



www.rougeriver.com

Goal: Improve water quality in the River and restore impaired designated uses

In 2005, the **City of Dearborn Heights** completed construction of a new sanitary sewer to transport flows from three Phase II Combined Sewer Overflow (CSO) outfalls to the existing Dearborn Heights Phase I CSO retention/treatment basin.



In September 1999, a new **Wayne County** sewage pump station (Pump Station 1A) designed to help alleviate a surcharge condition in the Wayne County sewer system, started operation. This pump station, along with the relief sewers constructed by the **City of Westland**, has significantly reduced the number and volume of Sanitary Sewer Overflows (SSOs) from the Middle 3 Communities. The number of SSOs reported dropped from 34 in 1999 to 11 in 2000, even though 2000 was a year of greater rainfall than 1999.

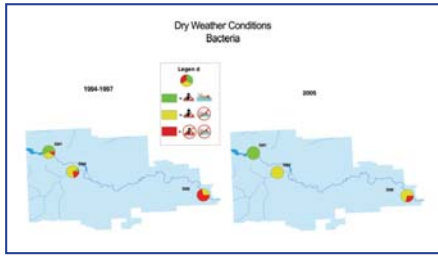
The **City of Westland** implemented a Rear Yard Catch Basin Disconnect Program, documented existing sewer system conditions and conducted a pilot footing drain removal program in 2004 with grant funding from the Rouge Project. In addition, sanitary sewers have been extended to existing homes in the City of Westland that are without sanitary sewers. Properties with onsite sewage disposal systems can now connect to a sanitary sewer.

Garden City conducted a \$766,000 SSO control project in 2003 to reduce excess peak flows through evaluation and modification of in-line storage. The goal of the project is to reduce

the wet weather peak flows from Garden City to the Wayne County Middle Rouge Interceptor by efficiently maximizing use of available in-line storage capacity.

In 2004, the communities of **Dearborn Heights** and **Redford Township** signed a Memorandum of Understanding with the **City of Detroit** that calls for enlarging the Upper Rouge Tunnel to control several remaining uncontrolled outfalls within these two communities.

Recent dry weather water quality monitoring in the Middle 3 subwatershed shows that the river is not always suitable for recreational activities like swimming. However, water quality is improving, especially near Newburgh Lake (G81), where in 2005 all samples collected met the State standard for total body contact recreation. Continued improvement is expected further downstream where combined sewer overflow discharges have been controlled. Data was collected by the Assembly of Rouge Communities, now the Alliance of Rouge Communities (ARC) and the Rouge Project. The chart shows the percent of the time conditions were suitable for swimming and boating based on State water quality standards for bacteria.



Middle 3 Subwatershed

Goal: Remove sources of pollution that threaten public health

From 1996-98 Newburgh Lake, along Wayne County's Hines Parkway in the **City of Livonia** was restored by removing PCB-contaminated sediment and fish and establishing fish habitat. After remediation, the lake was re-vegetated and restocked for future use.



The **City of Livonia** constructed the Sunset Hills Sanitary Sewer to eliminate a SSO.

Wayne County's on-site sewage disposal system (OSDS) ordinance went into effect for the Rouge Watershed in February, 2000. The regulations require the inspection of all residential OSDS by private evaluators at the time of sale of a property. The regulations also require septic servicers to report amounts of septage removed from septic tanks. From 2000-03, 431 OSDS were inspected under the "time of sale" provision of the ordinance and 176 OSDS were found to be failing.

Garden City identified and sampled storm water structures where visual observations suggest the possibility of upstream illicit discharges.

In 2003, **Wayne County** successfully traced an oil spill in Newburgh Lake to the source and recovered investigative and containment costs from the responsible party.

Garden City received a Rouge Project grant in 2004 to conduct a water quality-based determination of SSOs. The project provided data to better understand the quality of wet weather sanitary sewer flows and their impact on receiving waters.

From 1994-2005 the **Wayne County Department of Environment** has conducted an illicit discharge elimination program in the Middle Three Subwatershed. During that time, 1,564 facilities have been inspected and 132 facilities were found to have 267 illicit connections. Confirmed corrections have been made by 82 facilities.

In 2000, the **City of Westland** passed an ordinance prohibiting the feeding of pigeons, doves, gulls and waterfowl on private or public property.



City of Dearborn Heights inspected commercial businesses as part of a pilot program for its Illicit Discharge Elimination Program.

In 2005, **Wayne County and Redford Township** sponsored a household hazardous waste disposal day and had 1,331 cars participate.

Goal: Educate the Public

The Middle 3 Subwatershed communities of **Westland**, **Garden City**, **Dearborn Heights**, and **Wayne County** donate funding to the Friends of the Rouge (FOTR) to continue public education efforts in the subwatershed.

Ours to Protect road signs have been installed at numerous tributary crossings throughout the Middle 3 Subwatershed.

The Nankin Mills Interpretive Center, operated by **Wayne County Parks** in the **City of Westland**, was opened to the public in 2001. It was created to foster awareness and appreciation of the natural and cultural resources of the Rouge River Watershed through exhibits and interpretive programming and to promote stewardship of these resources.



The Middle 3 Subwatershed sponsored a bus tour for elected officials with the Friends of the Rouge in 2002.

The cities of **Livonia**, **Westland**, and **Garden City**, **Redford Township** and **Wayne County** include information about the Rouge River and storm water management on their community websites.

The 2005 Frog and Toad Survey sponsored by FOTR, which drew 619 volunteers watershed-wide, found Wood Frogs, Spring Peepers, American Toads and Green Frogs in the Middle 3 Subwatershed.



Citizens can use the **Wayne County** Hotline to report suspected illicit discharges.



The **Middle 3 communities** and **Wayne County** participate in the Southeast Michigan

Partners for Clean Water which has produced materials on "Seven Simple Steps to Clean Water," which discusses proper fertilizer use, car washing techniques, pet waste disposal and other river-friendly behaviors.



The **City of Livonia** and the **City of Westland** hosted Detention Pond Maintenance Workshops in 2005 for Rouge River Watershed residents, in cooperation with the Alliance of Rouge Communities, Wayne County, and the Clean Michigan Initiative (CMI).

Goal: Enhance and preserve fish and wildlife habitat, especially along the river

Annually, FOTR sponsors benthic macroinvertebrate sampling in the winter and fall. The **Wayne County Department of Environment** monitors benthic populations along the Middle Rouge River.



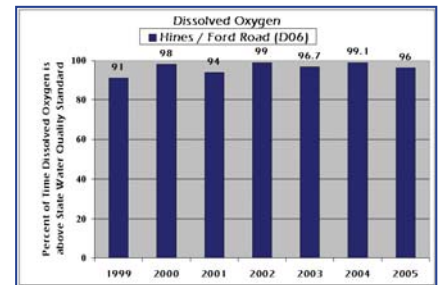
Wayne County Parks and **Wayne County Watershed Management Division** have worked cooperatively on land maintenance efforts that are more river/habitat friendly. Efforts included invasive species management, streambank stabilization, woody debris management and the establishment of "Grow Zones" to provide habitat and increase infiltration of storm water runoff.



In 2003, the improved water quality in Newburgh Lake, along Wayne County's Hines Parkway in the **City of Livonia** allowed the Michigan Department of Community Health to lift a fish consumption advisory ban for some species of fish caught in Newburgh Lake. There are no consumption restrictions covering the general population for Carp, Channel Catfish and Largemouth Bass from Newburgh Lake.

Dissolved oxygen in the river is important to the survival of fish and other aquatic life. Insufficient dissolved oxygen limits ecosystem diversity and can result in fish kills and produce foul odors from the decomposition of organic materials. Michigan water quality standards require a minimum of 5.0 mg/L of dissolved oxygen to support warm water fish populations.

Dissolved oxygen concentrations in the Middle 3 subwatershed at Hines/Ford Road (D06) have improved since the implementation of projects in 1997 and 1998 to control pollution discharges from combined sewer outfalls and other sources. The figure shows the percent of the time dissolved oxygen concentrations met the state standard since 1999.



Goal: Minimize the amount of soil erosion and sedimentation

The objective of the Elm Grove Sedimentation Basin Project in the **City of Westland** was to determine the effectiveness that sedimentation pond construction at storm water outlets may have in reducing peak flows and the entry of deleterious materials into the Rouge River. The project, which was completed in 2003, reduced peak flows to the Rouge River, improved the quality of storm water and allowed continued use of the Elm Grove area for recreation purposes.



The Nankin Mills Streambank Stabilization Project, in the **City of Westland**, was completed by **Wayne County** and utilized a variety of streambank stabilization methods to improve the aesthetics, recreational desirability and water quality of the Nankin Mill Race. Plantings of native materials, trees and wildflowers were included to demonstrate natural erosion and control measures.



The **City of Westland** conducts several storm water Best Management Practices (BMPs) including a soil erosion program, the use of phosphorus-free fertilizers on city-owned property and street sweeping.



The **City of Westland** hosted a "Keeping it Clean" workshop for municipal maintenance staff which provided an overview of the good housekeeping requirements outlined in the federal Phase II Storm Water Regulations and how individual actions can protect our water resources. The workshop was presented by the Southeast Michigan Council of Governments (SEMCOG) and the Southeast Partners for Clean Water, and was funded in part by the Rouge River National Wet Weather Demonstration Project.

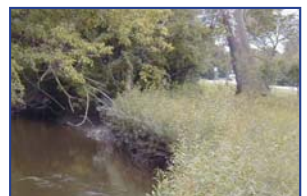


A 1995 Rouge Project report found that 80% of the Middle Rouge River is eroded. Streambank erosion is an important indicator of watershed condition. It can directly affect several important stream functions and designated uses, including fish and benthic invertebrate habitat and recreational use. Actively eroding streambanks support little or no riparian vegetation. This adversely affects a wide variety of wildlife species, including fish, through a reduction in cover, reduced inputs of organic matter into the aquatic ecosystem, and higher summer water

temperatures due to increased solar radiation. Eroding banks also contribute sediment to the stream channel which impairs aquatic habitat. The report indicated that improvement of the river's ecosystem impacted by streambank erosion will require stream flow modifications, streambank stabilization, revegetation of bare banks, tree cover and wetland restoration.

Wayne County, the **City of Dearborn Heights**, FOTR and CMI cosponsored a Riparian Corridor Management presentation, "Caring for Your Creek" in the City of Dearborn Heights in 2005.

In 2004, the **Wayne County** completed the construction of 10 streambank stabilization projects along the Middle Rouge River. The projects were implemented using bioengineering and biotechnical methods, including live stakes, geogrid, riparian buffer expansions and crib walls.



Goal: Reduce water volumes and velocities during storm events



The **City of Livonia** received Rouge Project grants in 2004 to remove the storm water from the sanitary sewer along Ann Arbor Trail.

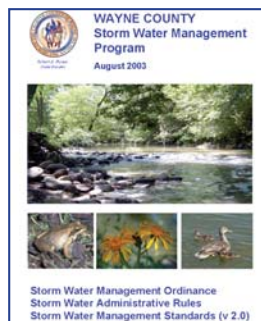
The **ARC** was founded in 2003 to enable Rouge River Watershed communities to lead watershed management activities into the future. In 2005, thanks to efforts spearheaded by the ARC and supported by other watershed entities, government officials and environmental organizations, legislation as signed by Michigan's governor to institutionalize watershed alliances such as the ARC. The ARC conducts river health monitoring activities and has sponsored workshops on detention pond maintenance, public education tools and techniques, and practices to manage storm water from development projects.



The **Wayne County** Storm Water Ordinance was adopted in 2000 to help minimize flooding problems, streambank erosion and other impacts to natural resources downstream of development projects.

The Ordinance requires that management measures be implemented as part of development projects to reduce peak river flows and remove pollution from storm water runoff. To date, storm water management measures have been implemented as part of over 3,000 development projects in the County under this program.

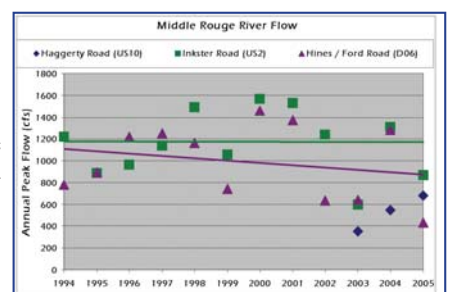
The **City of Westland** developed a hydrologic model of the city to determine the overall impact of the city on the Middle Rouge River. The model determined the amount of flow from the city to the Rouge River and the impact the city would have on the river if it implemented storm water storage.



For over 4 years, Ford Motor Company employees have helped manage log jams, establish native plantings and perform other riparian corridor stewardship activities as part of the company's annual Rouge Clean Up volunteer effort.

From 1990 to 2000 residential, commercial and industrial land use in the upstream communities of the Middle Rouge have increased while agriculture, grasslands, and wetlands has decreased by approximately 10 percent. Urban development typically results in an increase in impervious area, leading to increased runoff during storm events. Moderate, stable river flows are generally best for aquatic life and stream habitats. Extreme variations of the river flow rate during storm events can result in severe bank erosion, which can significantly degrade game fish habitats.

The figure shows that peak river flows are remaining fairly consistent in the Middle Rouge River despite increasing development. This indicates that the measures taken to manage storm water runoff as upstream areas are developed are helping to protect the Middle Rouge River ecosystem.



Rouge River Subwatershed

Middle 3

The Middle 3 Rouge River Subwatershed, the smallest of seven Rouge River subwatersheds, covers approximately 32.39 square miles or 20,725.7 acres in Wayne County. Approximately 80% of the land in the Middle 3 subwatershed is developed, which has resulted in 29% of the land now being impervious to the infiltration of rainfall and snowmelt into the soil. It has high residential density and medium to heavy commercial uses along major transportation routes, like Telegraph Road, Middlebelt Road and Ford Road. The Middle 3 Rouge River Subwatershed also has many parks and nature centers including Nankin Mills, the William P. Holliday Forest and Wildlife Preserve and Newburgh Lake, which are all located along Hines Drive in the Wayne County Park system.

As part of the subwatershed management planning process, long term goals and short term objectives were established in the Middle 3 Rouge River Subwatershed Management Plan. The long term goals of the Middle 3 Rouge River Subwatershed Management Plan are:

- Improve water quality in the river and restore impaired designated uses.
- Remove sources of pollution that threaten public health.
- Educate the public.
- Enhance and preserve fish and wildlife habitat, especially along the river.
- Minimize the amount of soil erosion and sedimentation.
- Reduce water volumes and velocities during storm events.

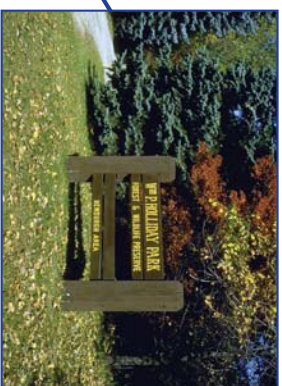
The subwatershed management planning process and subwatershed projects that fulfilled Subwatershed Advisory Group goals couldn't have been completed without partnerships between the communities, the counties, non-profit organizations, stewardship groups, citizens and local schools, colleges and universities.



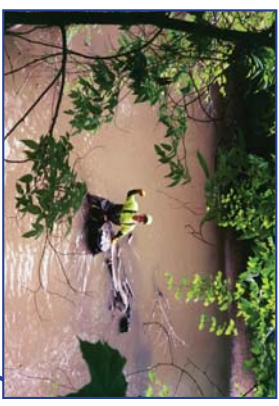
The City of Westland partnered with the Wayne-Westland Community Schools to present "Rooting for the Rouge," which teaches fourth grade students about land and water issues.



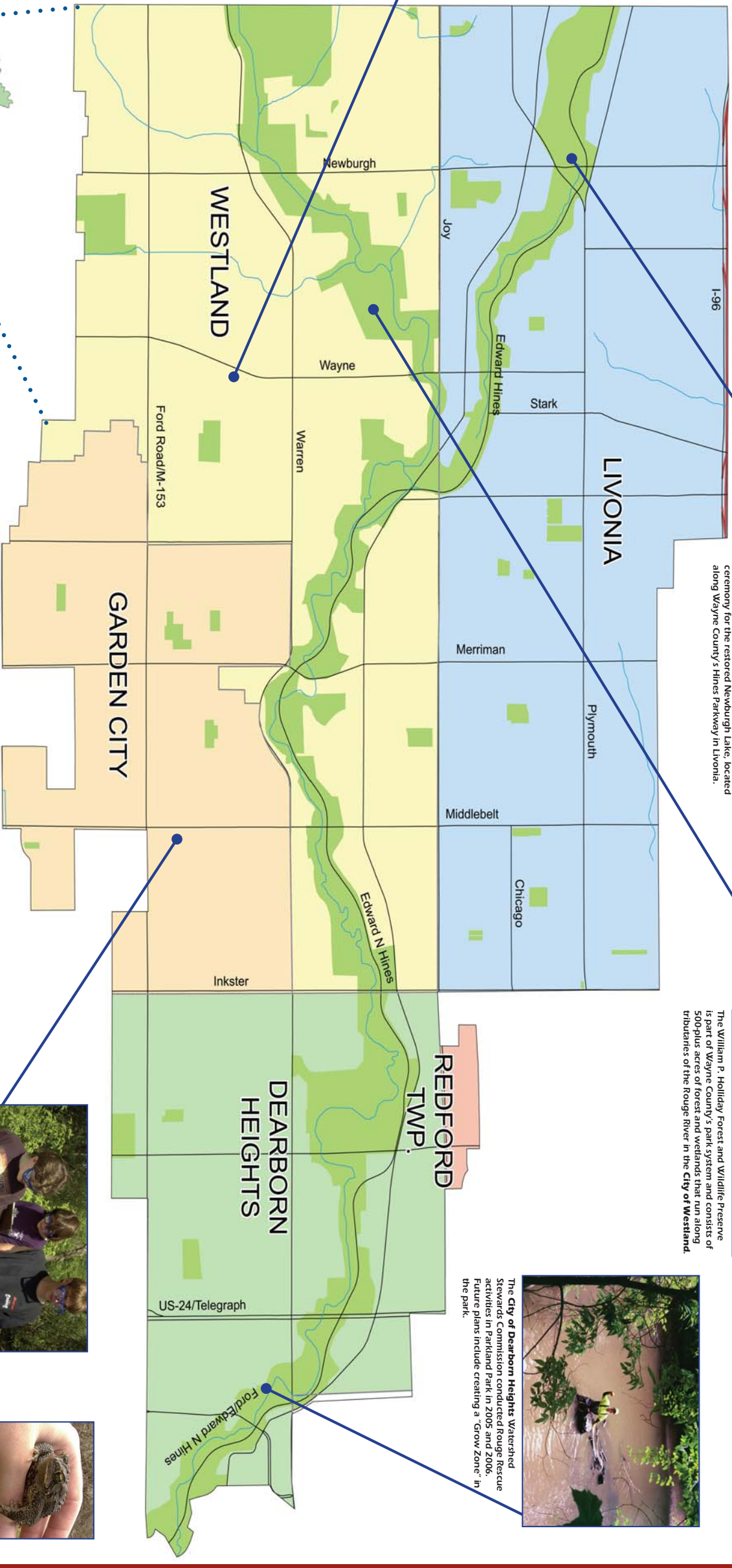
Numerous educational activities were offered to the City of Livonia schoolchildren in 1998 during the dedication ceremony for the restored Newburgh Lake, located along Wayne County's Hines Parkway in Livonia.



The William P. Holliday Forest and Wildlife Preserve is part of Wayne County's park system and consists of 500-plus acres of forest and wetlands that run along tributaries of the Rouge River in the City of Westland.



The City of Dearborn Heights Watershed Stewards Commission conducted Rouge Rescue activities in Parkland Park in 2005 and 2006. Future plans include creating a "Grow Zone" in the park.



The American Toad is one of four species of frogs and toads found in the Middle 3 Subwatershed.



Garden City High School, in Garden City is one of the seven schools in the Middle 3 Subwatershed that participate in the Rouge Education Project sponsored by Friends of the Rouge.

| Land Use Category | Percentage of Total Drainage Area |
|--------------------------|-----------------------------------|
| Forest/Lake | 14.7% |
| Agriculture | < 1.0% |
| High Density Residential | 64.8% |
| Commercial/Industrial | 20.4% |
| Highways | < 1.0% |
| Wetlands | < 1.0% |

| Legend | Communities |
|---------------------------|------------------|
| Rouge River & Tributaries | DEARBORN HEIGHTS |
| Lake | GARDEN CITY |
| Highway | LIVONIA |
| County Road | REDFORD TWP. |
| Recreation Area | WESTLAND |

| Demographics |
|---|
| Size: 32.39 square miles |
| Population (1990): 125,374 |
| Miles of stream: 115 miles |
| Jurisdictions: Wayne County and 5 communities |



Some photos provided by: Friends of the Rouge, Wayne County Department of Environment, Michael Precious, the City of Westland, Environmental Consulting & Technology, and Southeast Michigan Council of Governments (SEMCOG).